REMARKS

Claim 1 has been amended, original Claims 2-24 remain pending, and new Claims 25-31 have been added. The amendment to Claim 1 finds support throughout the specification, see, e.g., paragraphs 0014, 0015, 0028, and 0029. Claims 25-31 depend from Claim 1, but introduce method of making limitations; the method limitations provide further distinguishing features of Applicant's invention.

Rejections under 35 USC §103

The Examiner maintained his rejection of Claims 1-2, and 6 as being obvious over Pan in view of 9-75480. According to the Examiner, Pan discloses an antimicrobial grip comprising an elastomer with an inorganic antimicrobial agent (tin) bonded to a textile layer, but fails to teach an elongated strip or a polyurethane elastomer. The Examiner suggests that the deficiencies in Pan can be cured by the teaching of 9-75480, which purportedly discloses an elongated strip and a resin film of foamed polyurethane on a side of fabric containing an antimicrobial.

Applicant respectfully disagrees. First, Applicant maintains his position that Pan fails to enable a skilled artisan to make Applicant's grip. However, even assuming *arguendo* that a skilled artisan would ignore the express definition of PU as plutonium, and would find the Pan specification enabling for making a rubber grip with an antimicrobial agent, Pan still fails to disclose an inorganic antimicrobial agent. Instead, Pan discloses an organic antimicrobial agent, more specifically, an organotin antimicrobial agent in the form of a solvent (see e.g., Pan paragraph 0009 and Claim 1). Applicant claims an inorganic antimicrobial agent. Organometallic compounds behave very differently from inorganic compounds. For example, organometallic compounds are typically soluble in organic solvents, while most inorganic compounds are not soluble in organic solvents. Pan's organotin compound is in fact described as a solvent. Furthermore, Pan's organotin antimicrobial agent is a solvent that is miscible with a solution of PU and DMF (see e.g., Pan Claim 1), while Applicant's inorganic antimicrobial agent is not.

The 9-75480 reference also does not teach the use of an inorganic antimicrobial compound. Instead, 9-75480 teaches an organic antimicrobial agent derived from tree sap that is used in solution form in the end product (see 9-75480 Abstract). 9-75480 teaches away from the dispersion of the antimicrobial agent (organic or inorganic) in the elastomer itself, and instead,

discloses a tape body that contains an antimicrobial solution (see 9-75480 Title). The antimicrobial solution disclosed in the 9-75480 reference is susceptible to evaporation, relatively rapid loss of antimicrobial activity over time, and rapid leeching of the antimicrobial solution from the tape body. Dispersing an inorganic antimicrobial agent within the elastomer, as recited by Applicant, solves those long standing problems.

The chemical arts are well known for being unpredictable. It is extremely difficult to predict with any degree of certainty that a substitution of an inorganic antimicrobial agent for an organotin (Pan) or organic (9-75480) antimicrobial agent would result in a final product with antimicrobial activity. The interaction between an organic antimicrobial agent (including the organic agents disclosed in Pan and 9-75480) and an elastomer, which is an organic macromolecule, is much different from the interactions between an inorganic antimicrobial agent and an elastomer. In the case of the prior art organic antimicrobial agents, hydrophobic interactions between the organic antimicrobial agent and the elastomer would be expected. On the other hand, much less chemical interactions would be expected between the inorganic antimicrobial agent and the elastomer. Thus, not only is there no express teaching and no motivation in Pan and/or 9-75480 to modify the organic antimicrobial agent, but the skilled artisan would derive no expectation of success from the cited references in substituting an inorganic antimicrobial agent for the disclosed organic antimicrobial agents.

Because chemical interactions (e.g., hydrophobic interactions) among the constituents of a composition play an important role in the functional properties of an active ingredient, it is unclear here how much effect such interactions may have on the antimicrobial activity of the selected antimicrobial agent. Experimentation would certainly be needed to determine whether antimicrobial activity is retained when using different antimicrobial agents in a particular system. In fact, experimentation is still needed when switching one organic antimicrobial agent for another organic antimicrobial agent. Pan states in the specification that it took "...many years, after continuous researches and experiments..." to come up with the combination of the organotin, PU resin and DMF solvent (see Pan, Paragraph 6). Replacing the liquid, organic solvent-miscible, organotin antimicrobial agent with an insoluble inorganic antimicrobial agent (see e.g., Applicant's preferred embodiments; Claim 12) would be even more unpredictable, and likely require even more experimentation, because of the large chemical differences between organic and inorganic compounds.

Because neither Pan nor 9-75480 disclose the use of an inorganic antimicrobial agent, the combination of Pan and 9-75480 does not teach every limitation in Claim 1. Therefore, Applicant respectfully requests that the Examiner withdraw his rejection of Claims 1-2 and 6.

The Examiner also rejected Claims 3-5 as obvious over Pan in view of 9-75480 in further view of Huang. The Examiner added Huang to provide the missing teaching of a grip tape comprising polyurethane with closed pores. However, as discussed above, the combination of Pan and 9-75480 fail to teach Applicant's grip comprising an inorganic antimicrobial agent. Huang does not teach any antimicrobial agent. Therefore the cited combination of Pan, 9-75480 and Huang still fail to teach each and every element of the claimed invention, e.g., a grip comprising an inorganic antimicrobial agent, as recited in Claim 1. Since Claims 3-5 depend from Claim 1, Applicant respectfully requests withdrawal of the rejection of Claims 3-5.

The Examiner also rejected Claims 7-8 as obvious over Pan in view of 9-75480 in further view of 7-215811. The Japanese reference, 7-215811, was added to provide the missing teaching of the silver antimicrobial agent recited in Claims 7-8. The Examiner stated that 7-215811 discloses using tin or silver to *impregnate* polyurethane. Applicant respectfully disagrees. First, Applicant has carefully reviewed the copy of the translation of the 7-215811 abstract provided by the PTO. There is no word impregnate in that translation. Moreover, a careful reading of the method for "imparting" the antibacterial activity reveals that this method consists merely of two immersion steps—which cannot possibly result in an elastomer layer in which the antimicrobial metal is dispersed, as recited by Applicant.

More particularly, 7-215811 teaches a "...method for imparting a textile good or a polyurethane foam with an antibacterial activity against MRSA bacterium.... [The method] comprises (1) a process for immersing a material composed of the textile good or the polyurethane foam... in an aqueous solution containing... tin and (2) another process for immersing the treated material [i.e., already coated with tin solution] in an aqueous silver nitrate solution" (emphasis added; 7-215811 Abstract). Thus, 7-215811 discloses only immersing a pretreated [tin coated] textile good or a polyurethane foam in an aqueous solution of silver nitrate. At best, such an immersion step can only coat exposed surfaces of the polyurethane with the silver nitrate. This external layer of silver nitrate would be easily removed by water-based

fluids (e.g., sweat) and/or abrasive force. In contrast, Applicant's amended claims recite an elastomer layer further comprising an inorganic antimicrobial agent dispersed therein. Because the inorganic antimicrobial agent made by Applicant's method is mixed within the elastomer before coagulation of the monomers, the inorganic antimicrobial agent is dispersed within the elastomer and is therefore resistant to removal by water-based fluids and/or abrasive force. The difference between an elastomer layer coated with an antimicrobial metal and an elastomer layer having an antimicrobial metal dispersed therein is significant in that the latter provides a grip with long-lasting and durable antimicrobial properties. Accordingly, 7-215811 fails to provide the missing teaching of silver dispersed within the elastomer layer.

Because the combination of Pan in view of 9-75480 in further view of 7-215811 fail to teach an antimicrobial grip, comprising an elongated strip comprising an elastomer layer bonded to a textile layer, wherein the elastomer layer further comprises an inorganic antimicrobial metal (zinc or silver) dispersed therein, the cited combination cannot render obvious Claims 7-8. Accordingly, Applicant respectfully requests withdrawal of the rejection of Claims 7-8.

The Examiner also rejected Claims 9-11 and 13-15 as obvious over Pan in view of 9-75480, in view of 7-215811, and in further view of Yasui. Yasui is added to provide the missing teaching of inorganic silver in a porous mineral-based carrier recited in Claims 9-11 and 13-15.

Although it is agreed that Yasui teaches silver in a porous silica-alumina carrier, Applicant respectfully disagrees that Yasui in combination with Pan, 9-75480 and 7-215811 teach the invention recited in Claims 9-11 and 13-15. These claims depend from Claim 1. As detailed above, Pan in combination with 9-75480 fail to render Claim 1 obvious, because they fail to teach an inorganic antimicrobial agent dispersed within the elastomer layer. The addition of 7-215811 (providing inorganic silver) also fails to render the base claim (as well as Claims 7-8) obvious, because it provides only a silver-coated polyurethane foam, not an inorganic antimicrobial agent dispersed within the elastomer layer. The addition of Yasui (providing silver in a porous carrier) still fails to render Claim 1 obvious, because the teaching of Yasui is limited to thermally-molded polyurethane foams—not elastomer layers.

Unpredictability in the chemical arts with respect to the activity of biologically active compounds (discussed above with regard to substitution of active ingredients) also extends to the physical and chemical processes that active compounds are subjected to during manufacturing

processes. More specifically, subjecting an antimicrobial agent to various chemical and physical processes during the manufacturing process is likely to affect the antimicrobial activity of the agent. For example, subjecting a compound to foaming often has an effect on that compound's activity, because biologically active compounds may be denatured and/or oxidized along the extensive surface area (air/liquid interface) formed by bubbles in a foam. This is particularly true where extreme temperatures are applied during the thermal molding (as taught by Yasui). Moreover, there is no motivation to substitute the insoluble silver/carrier composition, disclosed by Yasui for use in thermally-molded polyurethane foams, for the organic antimicrobial solvents taught by Pan and 9-75480. Indeed, the properties of the organometallic agent as a solvent (e.g., miscible in DSM and PU) is touted by Pan as being important to the formulation—thus, teaching away from such a substitution. Accordingly, one of skill in the art would find no motivation in the references to substitute an insoluble silver/carrier composition for an organometallic solvent, where the antimicrobial agents were used under very different process conditions. Moreover, because of the very different chemical properties of the organic and inorganic antimicrobial compounds, the very different manufacturing processes and conditions, and the aforementioned unpredictability of biologically active compounds, even if motivated, a skilled artisan would have no expectation of success. Thus, it was not until Applicant made and showed the antimicrobial effectiveness of a grip material comprising an elastomer layer having an inorganic antimicrobial agent dispersed therein, that one skilled in the art could derive any expectation of success in making Applicant's grip.

Therefore, Applicant respectfully asserts that Yasui in combination with Pan, 9-75480 and 7-215811 fails to render obvious an elastomer layer comprising an inorganic antimicrobial agent, and requests withdrawal of the rejection of Claims 9-11 and 13-15.

The Examiner also rejected Claim 12 as being obvious over Pan in view of 9-75480, 7-215811, Yasui, and further in view of Applicant's own disclosure. The Examiner added Applicant's own disclosure to provide the missing teaching of one of Applicant's preferred inorganic antimicrobial agents. Without acquiescing to the appropriateness of citing Applicant's disclosure in combination with four (4) other references to establish obviousness, Applicant respectfully points out that Claim 12 is dependent on Claim 1, which is non-obvious over Pan in view of 9-75480, 7-215811 and Yasui for all of the reasons detailed above. Accordingly, the

addition of montmorillonite cannot cure the defect in the Examiner's case of obviousness of Claim 1, as all of the references combined still fail to render obvious a grip comprising an elastomer layer having an inorganic antimicrobial agent dispersed therein. Thus, Applicant respectfully requests withdrawal of the rejection of Claim 12.

The Examiner also rejected Claims 16, 19 and 22 as being obvious over Pan in view of Huang and in further view of 7-215811. Claims 16, 19 and 22 are independent claims that recite, respectively, a golf club, racket and exercise device, "...comprising a layer of polyurethane... further comprises a silver-based inorganic antimicrobial agent dispersed therein." As detailed above, Pan teaches an antimicrobial agent that is an organic solvent (organotin). Huang does not teach any antimicrobial agent. 7-215811 teaches coating a polyurethane foam with an aqueous solution of silver nitrate—it does not teach a layer of polyurethane further comprising a silver-based inorganic antimicrobial agent dispersed therein (as recited in Claims 16, 19 and 22). Accordingly, Applicant respectfully requests withdrawal of this rejection.

The Examiner also rejected Claims 17-18, 20-21 and 23-24 as obvious over Pan in view of Huang, 7-215811, and further in view of Yasui. Because Claims 17-18, 20-21 and 23-24 depend from independent Claims 16, 19 and 22, respectively, which are patentable over Pan in view of Huang and in further view of 7-215811 for the reasons articulated above, the addition of Yasui, which teaches silver in a porous carrier for use in a thermally-molded polyurethane foam, fails to cure the defect in the Examiner's case of obviousness against the independent claims. Accordingly, Applicant respectfully requests withdrawal of the rejection of Claims 17-18, 20-21 and 23-24.

CONCLUSION

In view of the above Remarks, Applicant respectfully requests withdrawal of rejections of the claims and assert that the present application is in condition for allowance. Should there be any questions concerning this application, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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